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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/834,198 | 04/12/2001 | Tapani Ryhanen | 297-010255-US(PAR) | 3943 |
| 2512 | 7590 | 09/27/2004 | EXAMINER | |
| PERMAN & GREEN 425 POST ROAD FAIRFIELD, CT 06824 | | | DEMAKIS, JAMES A | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2836 | |

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 09/834,198 | Applicant(s) RYHANEN ET AL. | |
| | Examiner James A Demakis | Art Unit 2836 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment of 8/16/2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 41 and 42 is/are allowed.
- 6) ☒ Claim(s) 1-7,9,13,18-20 and 37-39 is/are rejected.
- 7) ☒ Claim(s) 10-12,14-17,21-36 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/09/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation "element is set to an active state with at least a second control signal", and the claim also recites "element is set to the active state with a sum of the first control signal and the second control signal" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7,9,13,18,37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bozler et al., 5784189, and in view of Banks, 3387194.

Regarding claims 1-7,9,13,18,37-39; Bozler et al discloses a voltage waveform Figure11 for controlling the electrodes of a shutter, which reads on the MEM switch. The generated waveform of the voltage includes a turn on or raised voltage higher than a hold voltage level and fed to control MEM switch, see Figure 11 and 11:26-41. Additionally, the control signal may be a constant voltage or DC or the waveform could contain AC, which reads on sinusoidal or varying frequency, short duration pulses; see Figure 12 and 11:42-53. Bozler et al. also, disclose MEMS driven with drive and hold voltages or control signal waveforms, but do not disclose how to generate these voltages or control waveform signals.

Banks discloses a typical way of creating different voltage levels by connecting batteries in parallel or series. See Figure 2 for two different voltage levels. The way in which the levels are created, reads on adding the first and second control signals to create a larger signal. For instance, level 1 uses batteries in parallel, and level 2 uses series connected batteries.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Bozler et al. with the teachings of Banks for creating larger voltage or drive levels because of the inherent switching characteristics of the circuit to provide different voltages and improve overall efficiency.

6. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bozler et al. as applied to claims 1-7,9,13,18,37-39 above, and in view of Pond, 5943223.

Regarding claims 19-20; Bozler et al. disclose a MEM system but do not disclose voltage converter circuits.

Pond discloses a MEM switch circuit in voltage converters including a DC/DC converter and attendant circuit elements such as transistor switches 46, inductor 104, capacitor 106, etc.; see Figures 6, 8 and 9:60-67, 10:43-57.

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified Bozler et al with the teachings of Pond by using a power converter to minimize power consumption and increase the transition speed of the MEM switch.

Allowable Subject Matter

7. Claims 10-12,14-17,21-36,40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 41-42 are allowed.

9. The following is an examiner's statement of reasons for allowance:

The prior art does not disclose or suggest a micromechanical element, with all the claimed combinations, including setting to the active state with a sum of the first control signal and the second control signal, and further the means for feeding the sum of the first control signal and the second control signal with a raised voltage level to the micromechanical element, wherein at least one control electrode is at least partly covered by a dielectric layer to prevent galvanic contact between the electrodes and the micromechanical element; and a second switching transistor resets the charge of the intrinsic capacitance of the micromechanical element.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

10. Applicant's arguments with respect to claims 1-7, 9-40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Demakis whose telephone number is 571.272.2050. The examiner can normally be reached on 7:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571.272.2800 ext. 36. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Demakis



BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800